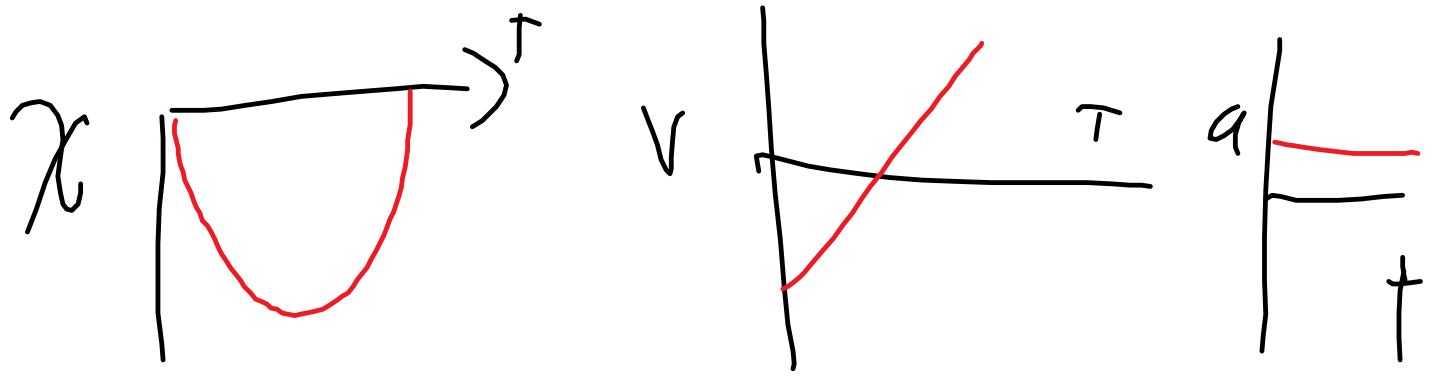
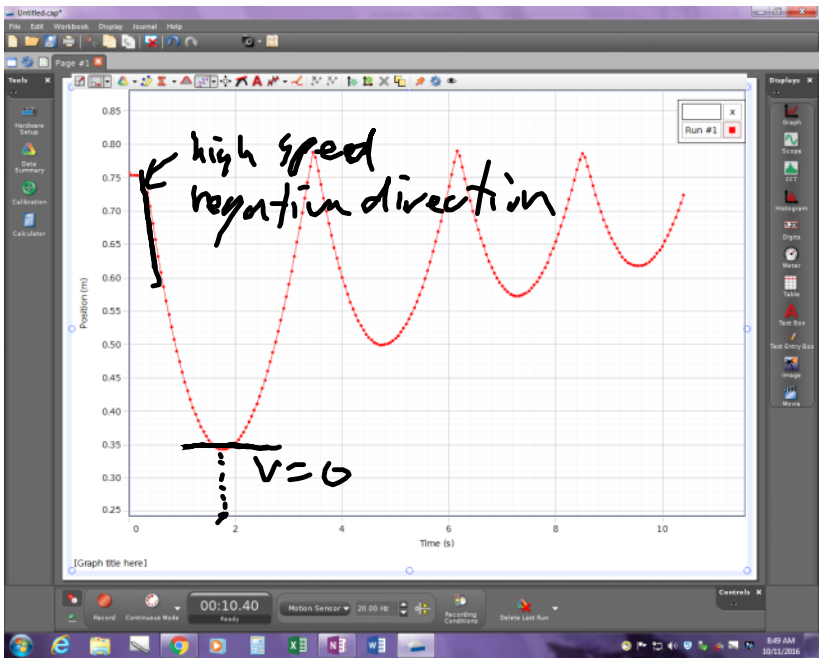
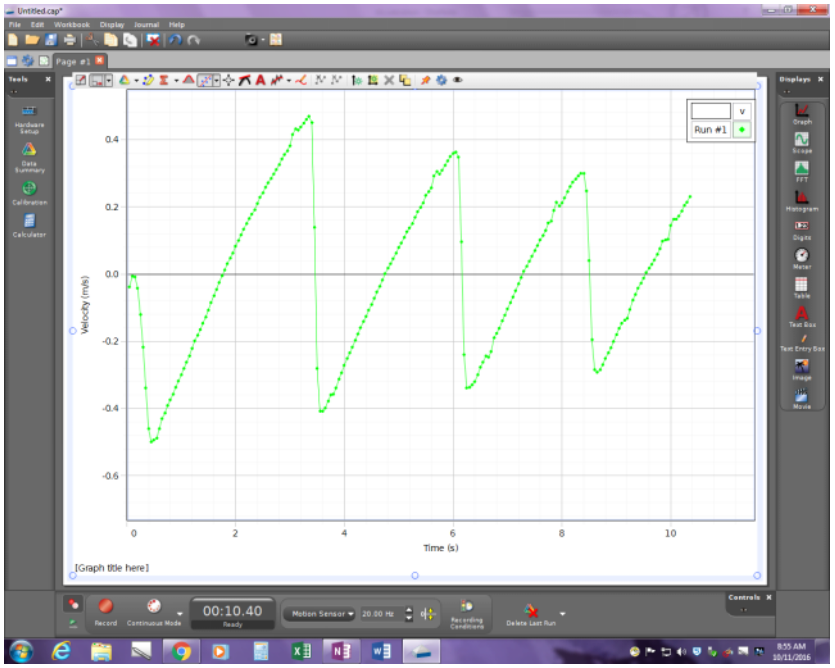
Acceleration
predicted motion of cart on slope
derive uniform acceleration equations
prep for lab next class - ticker tape
hand back quiz with 30 minutes left



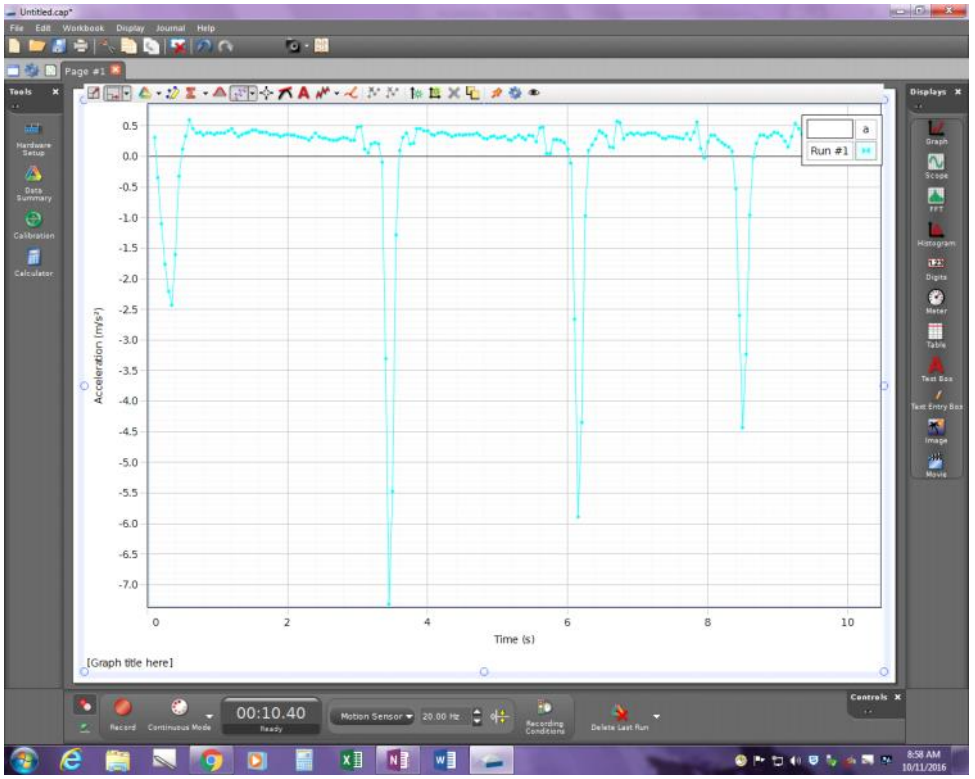


the position-time graph is parabolic
predicted d-t equation: $d \alpha t^2$ if vi = 0



the velocity - time graph is linear with slope equal to the acceleration, therefore it is constant acceleration motion

$v \alpha t$ if vi=0



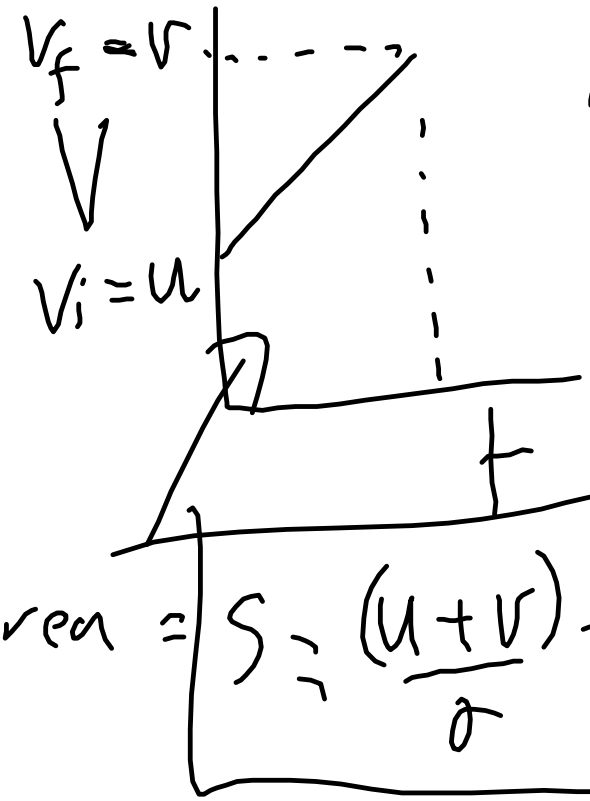
the acceleration - time graph is flat when the cart is on the slope but spiking when the cart hits the magnetic stopper.

note that the acceleration is about 0.4m/s^2
the whole time the cart is on the slope
going up, at the top and going down.
\
positive acceleration = increasing speed in the positive direction or decreasing speed in the negative direction = increasing velocity

negative acceleration = increasing speed in the negative direction or decreasing speed in the positive direction = decreasing velocity

Derive equations:

$a = \frac{\Delta v}{\Delta t}$ definition



Slope = a = rise / run

$a = \frac{v-u}{t}$ or $v = at + u$

area = $s = \frac{(u+v)}{2}t$

only valid if a is constant

Assignment

1. Combine 2 equations to make new equations.
To get rid of a variable
a) rid of v
b) rid of t

2.

the cart is moving at -0.37m/s at t=0.40s and it moving at 0.21m/s at t=2.40s. determine

a) acceleration
b) displacement
c) distance travelled

Quiz

1 a) 5 b) 3 c) 5 d) 4

2 a) $12.2 \times 4.7 = 57.34 = 5.7 \times 10^9\ m^2$

b) $3.60/12.8 = 0.2813 = 2.81 \times 10^4$ m/s

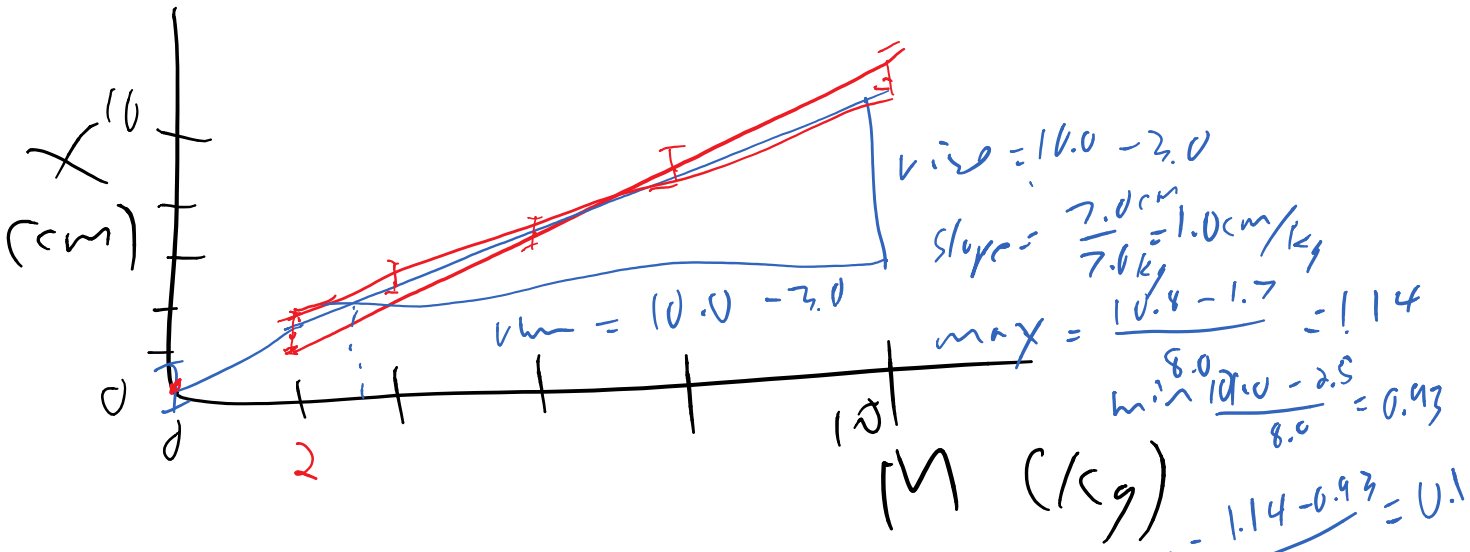
rule: mult/div round to the least number of sig figs

3. 96.2+5.008+13.48=114.688 = 114.7 m

round to least precise decimal place

b) 76.05 - 72.046=4.004 = 4.00 cm
c) 1.0002-1.10=-0.0998 = - 0.10 dm

a) pi x D = 3.14159x14.2=44.61058
0.3 x 3.14159=0.94248
44.6+/-0.9cm round uncertainty to 1 sf, round value to the precision of the uncertainty
0.0211x44.6=0.9411
b) A=pi r^2 3.14159x(14.2/2)^2= 158.37
uncertainty = 0.3/14.2=0.0211
when you multiply/div add percent uncertainty
2.11% x 2 = 0.0422
158.37 x 0.0422=6.6832
158+/- 7cm^2 best answer
158.4+/-6.7 cm^2 acceptable
158.4 +/- 7 not good
or 158 +/- 6.7 not good
5 a) 2.8 g/cm^3
b) =range/2 = 2.90-2.70/2 = 0.1 g/cm^3
2.8 +/- 0.1 g/cm^3
2.80 +/- 0.10 acceptable
c) 2.8-2.7/2.7 = 3.7%



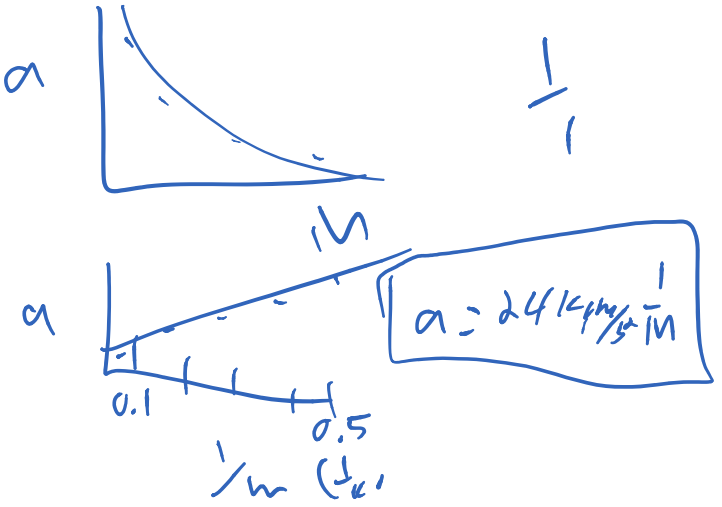
$\text{Slope} = 1.0 \pm 0.1 \frac{\text{cm}}{\text{kg}}$

$y = mx + b$

$x = 1.0 \pm 0.1 \frac{\text{cm}}{\text{kg}} M + 0$

test Wednesday Oct 19th

~~Monday Oct 17th~~



physics 11 lab manual
read accleration lab
prep data table dvs t and
v vs t (note t starts at 0.05s
not 0) page 22